Laboratoire Leprince Ringuet
Ecole polytechnique - Palaiseau

CALICE Calorimeter for ILC

EUDET module

Report from Mechanics Brainstorming

Marc Anduze – 30/06/2009

News

... from discussions with Stéphane Callier

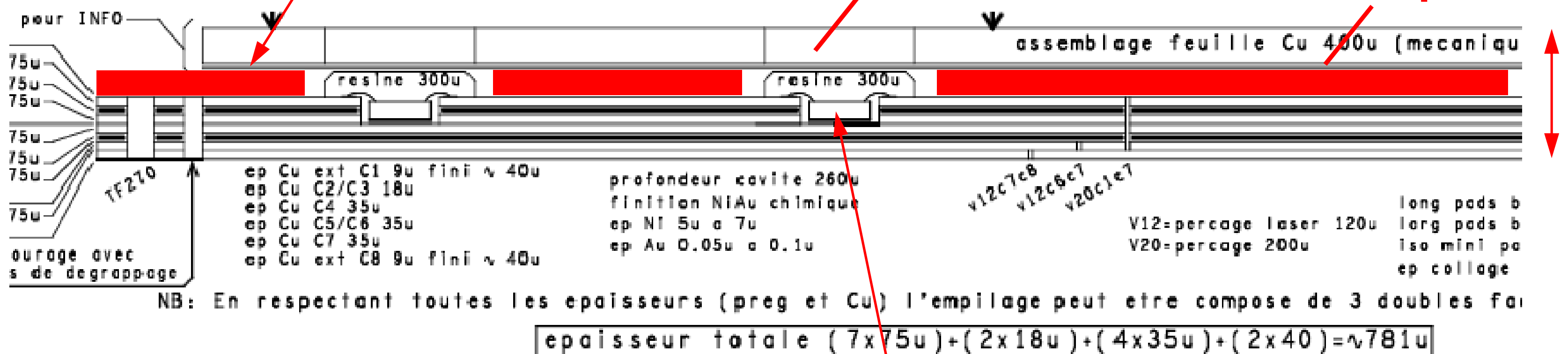
Review of the PCB Design : current design (~800 µm thick)

+ integration of more layers in order to have a thicker PCB (300 µm more) and suppress the air gaps (in red)

Integrate one copper layer on top:
good thermal contact with heat shield

No holes ???

500 µm thick



Chip Embedded & resin deposit possible
Check wires bonding process ???

EUDET - Current design kept

Calorimeter for ILC

Composite Part
with metallic inserts
(15 mm thick)

Thickness : 1 mm

182,1 × **9,4** mm

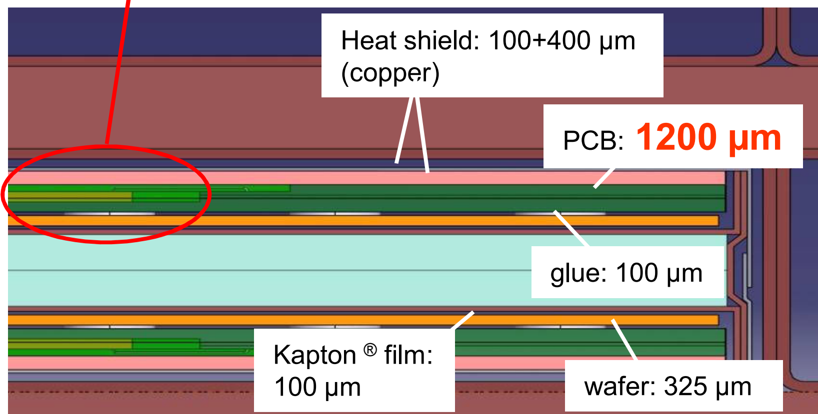
182,1 × **7,3** mm

1510 mm

550 mm

Chips and bonded wires
inside the PCB

Thickness :
FEV5-1 : 1.17mm (+-0.04)
FEV5-2 : 1.19mm (+-0.04)
FEV5-3 : 1.20mm (+-0.02)

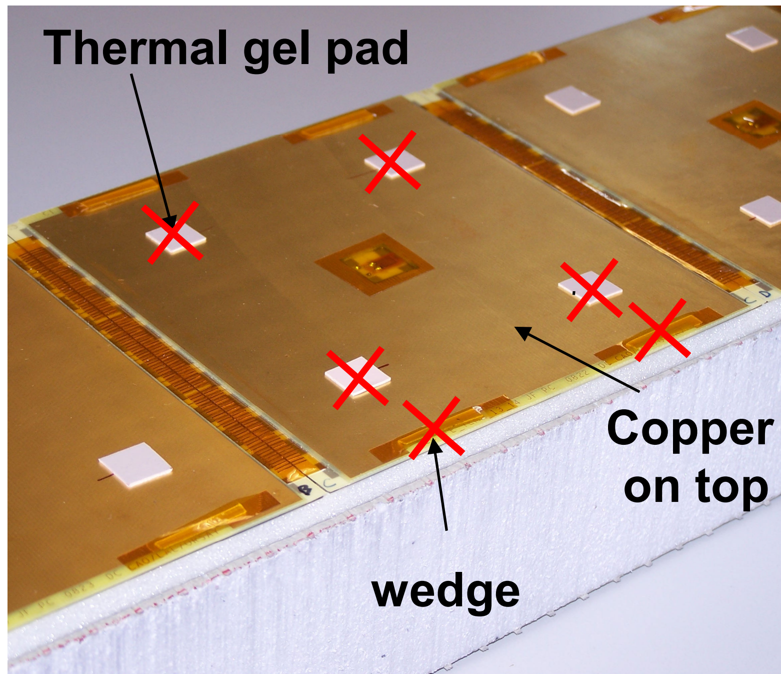


- ⇨ Clearance (slab integration) : 500 µm
- ⇨ Heat shield : **500 µm** → Thermal demonstrator
- ⇨ PCB : **1200 µm** → but 1100 µm used
- ⇨ Thickness of glue : 100 µm
- ⇨ Thickness of wafer : 325 µm
- ⇨ Kapton® film HV : **100 µm ?** → tests
- ⇨ Thickness of W : 2100/4200 µm (± 80 µm)

Thermal tests - Proposal

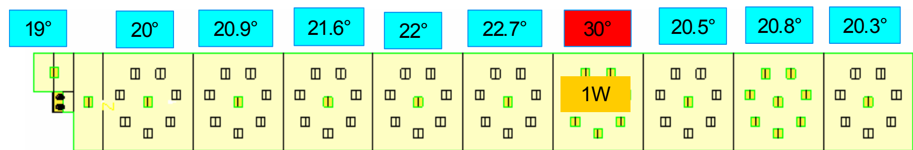
Slab cooling tests (1 Hot ASU + 8 thermal ASU):

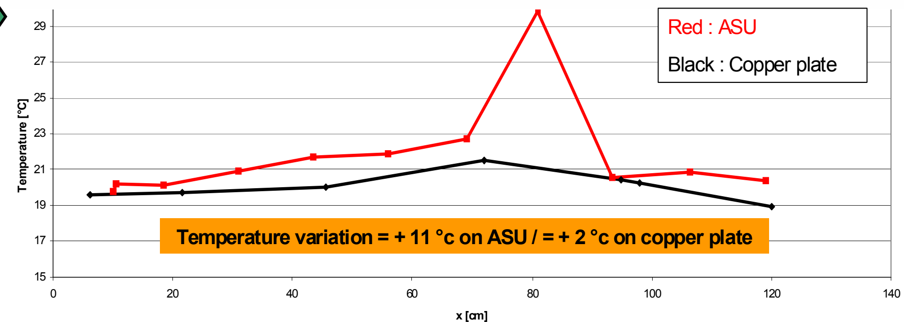
- Avoid all thermal gel pads + all wedges (no thickness in the current design)
- Direct contact Copper/copper on all the surface of each ASU is available
- Tests with 3 load cases : nominal (0.3W) – 1 W – maxi (2W ?)
- With & without gel pads-wedges : to compare the efficiency of the heat shield according to the contact type



Tests results : 1W in the middle of the SLAB:

Cooling system : 19°c / room temperature :20°c





- Thermal tests inside the alveolar structure : see Julien's talk